

FIGURE 1A

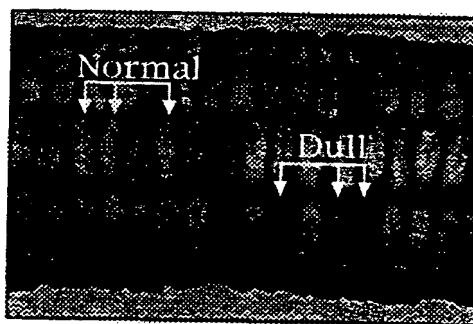
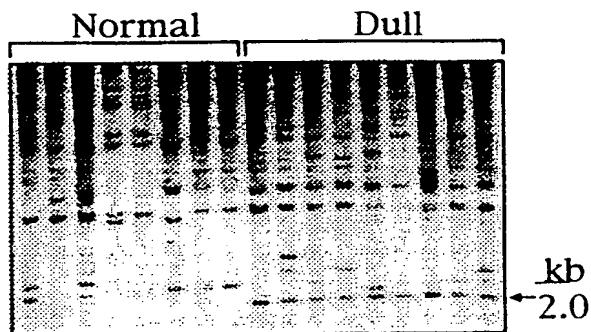
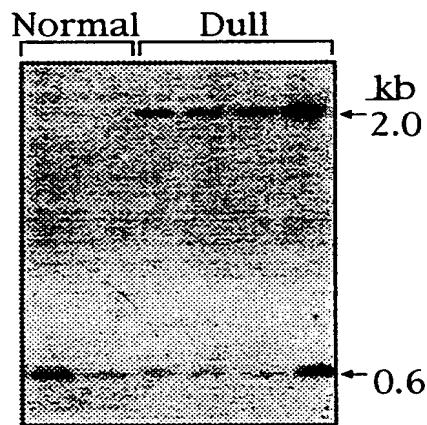


FIGURE 1B

**FIGURE 2A****FIGURE 2B****FIGURE 2C****2/19**

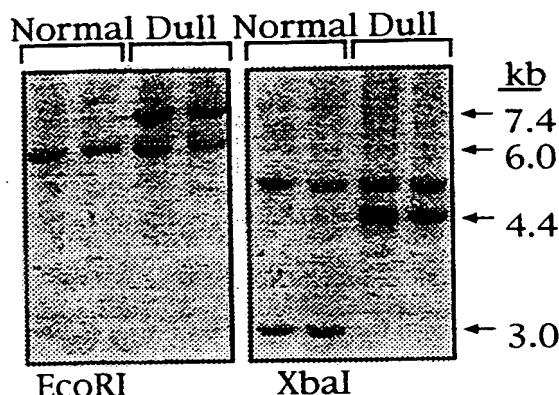


FIGURE 3A

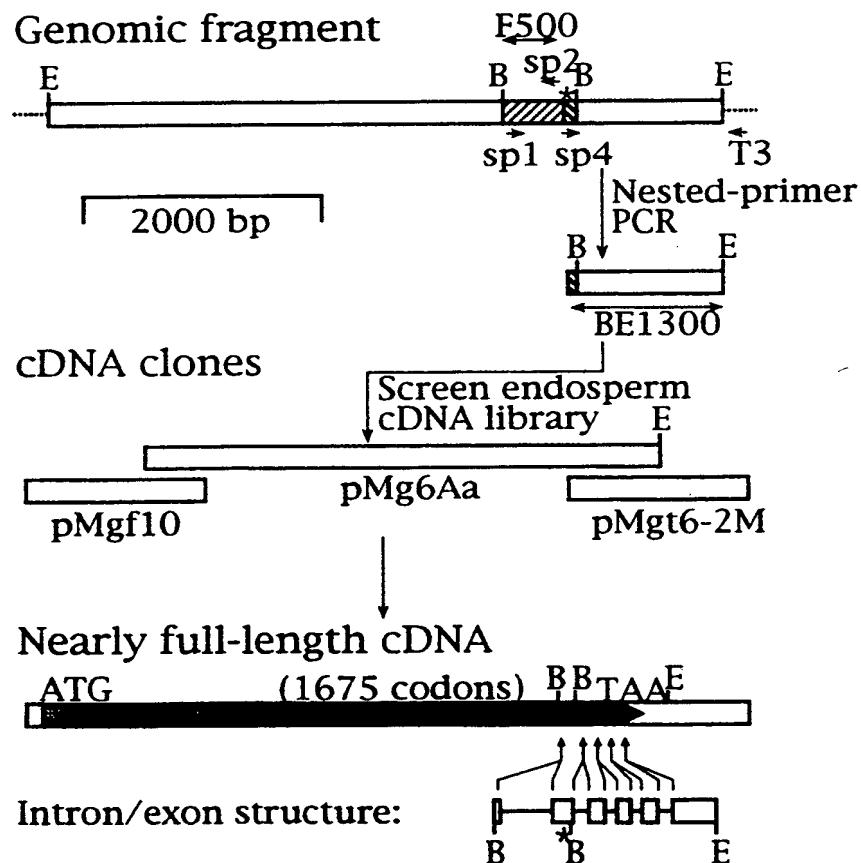


FIGURE 3B

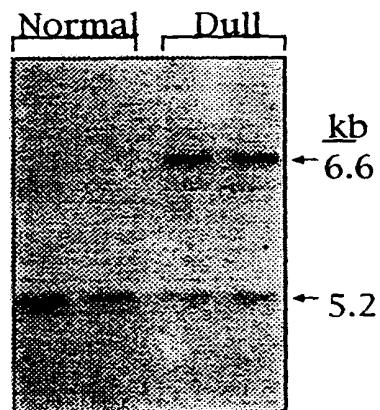


FIGURE 4

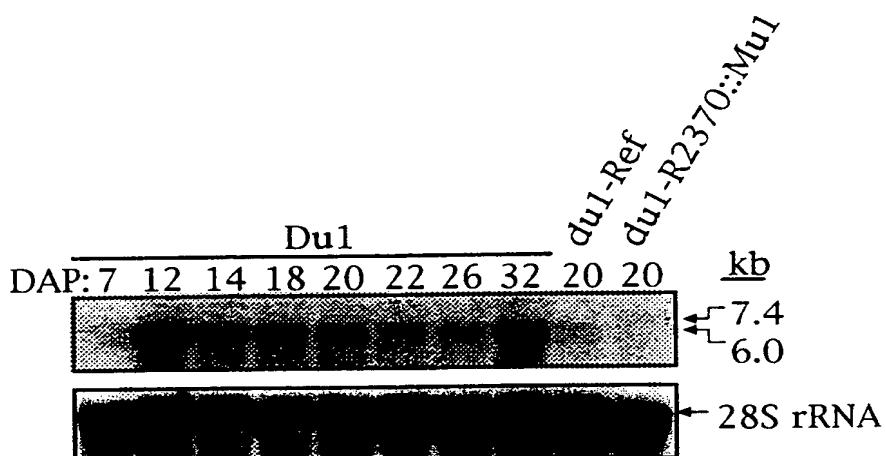


FIGURE 5A

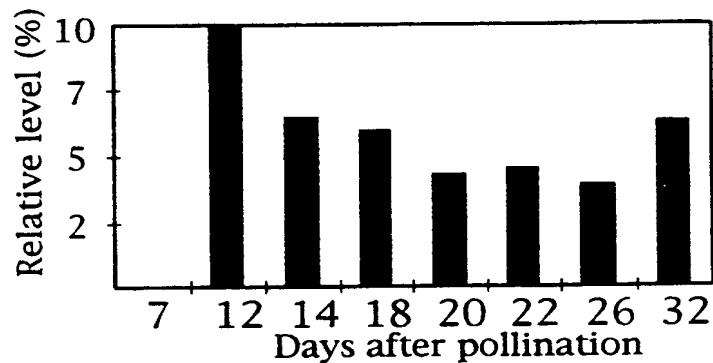


FIGURE 5B

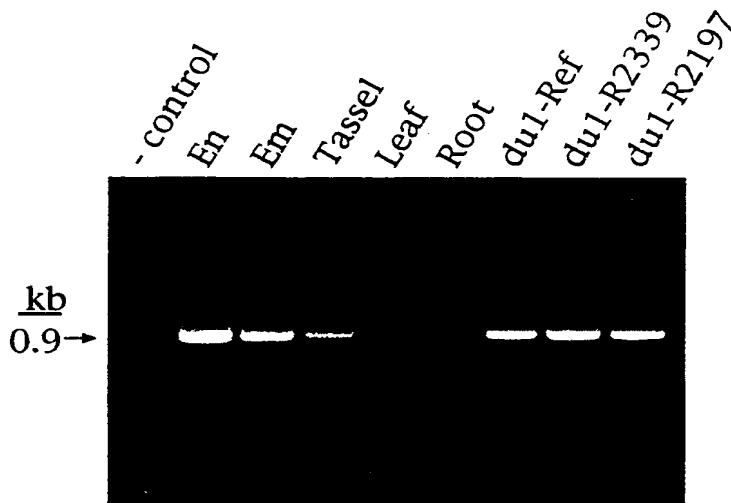


FIGURE 5C

5/19

| | | |
|-----|---|-----|
| DU1 | GTQSLRLRFARRRVIRCVVASPGCPNRKSRASPNTVAAYSNYAPRLLVESSSSKKSS | 30 |
| DU1 | EHHDSSRHREETIDTYNGLSGSDAAELTSNRDVEIEVDLQHISEEEELPGKVSINASLGE | 89 |
| DU1 | METVDEAEEVEDKFEVDTSGIVLRNAVAREVDPKDEHNAKDVFVVDSSGTAPDNAAVEE | 148 |
| DU1 | VVDEAEEVEDMVDVLDILGDLNNNATIEEIDLMEALLENNEDVDSPGNASSGRTYGGVDE | 207 |
| DU1 | LGELPSTSVDCTIAINGKRRSLKPKPLPIVRFQEQQIVLISIVDEEGLIASSCEEGQPVV | 266 |
| DU1 | DYDKQEENSTAFDEQKQLTDDFPEEGISIVHPEPNNDIVGSSKFLÉQKQELDGSYKQD | 325 |
| DU1 | RSTTGHLHQDQSVVSSHGQDKSIVGVPPQQIQQYNDQSIAGSHRQDQSIAGAPEQIQSVAG | 384 |
| DU1 | YIKPNQSTIVGSCKQHLLIPEPKKIESIISYNEIDQSTIVGSHKQDKSIVSVPEQIQSIV | 443 |
| SS3 | MDVFFPLHRSLSCTSNSNAITHLKKPILGFVSHGTTISLSVQSSSWRKDMVTGVS | 502 |
| DU1 | SHSKFNSFVDSYRQAESIIGVPEKVQSIITSYDKLIDQSIIVGSLRQDEPIISVPEKIQSI | 561 |
| SS3 | FSICANFSGRRRRKVSTPRSQGSSPKGFVPRKPSGMSTQRKVQKSNGDKESKSSTSKE | 561 |
| DU1 | VHYTKPNQSTIVGLPKQQQSIIVHTEPKQSIDGFPKODISIVGSSNEFQTKQLATVGTHD | 620 |
| SS3 | SEISNQKTVEARVETSDDDTKGVVRDHKFLEDDEDINGSTKSEMSPVRVSSQFVESEE | 174 |
| DU1 | GLLMKGVEAKEETSQKTEGDTLQATEENVDNLISOKOEGIKEADEITIIEKINDEDLYMIE | 679 |
| SS3 | TCGDDDKDAVNLNKSKRSEESGFIIDSMIREQSGSQGETINASSKGSHAVGTKLYEILQVD | 233 |

FIGURE 6A-1



| | | |
|------------|---|-------------|
| DU1 SS3 | EQKSIAMNEEQTI[TEEDIPMAKEIGIDKAKFIL[LE[EVGIIIEADEQYF VEPQLKENNAGNEYKGPVASKLLEITKASDVEHTESNEIDDLINNSFFKSDLTEEDE | 738 292 |
| DU1 SS3 | VDETSMSTEQ[DIQESPNDLDPQALWSMLQE[AEK[YSUGNK[LEFTYPOVL[KADSTIDLY PLAAGTVETCDISSLNLRLMEANLRRQAIERLAEEN[LOGIRLECFBEV[KPDEDVEIF | 797 351 |
| DU1 SS3 | FNRLLSAVANE[PDL[IK[GAFN[GKWRFFTEK[HKSE[AGDW[CCRLYIPKQAYRMDFVF LNRGLS[TRKNESTDV[LMGAENEMRYBSETTR[RETHLNGDWMSCKI[HVPKEAYRADEFVE | 856 410 |
| DU1 SS3 | FNGHTVYENNNND[VI[QIESTMD[ENL[FL[EEK[ORELEN[LANE[FAERRD[QRT FNGQDVYDNNDGND[SI[TVKGGM[QI[DEEN[LEEK[RE[QEK[LAKE[QAA[ER[FAE[QRR | 915 469 |
| DU1 SS3 | MEEPERADKADRVQAKVE[ET[KKNK[CNVLGLARAPVD[LYIEPITGQF[AT[VRLYYN IBAEKA[TEADRAQAK[EEAKKKV[RELMVKATKTRDITWYIEPSEFKOEDKVRLYYN | 974 528 |
| DU1 SS3 | INSRPIV[ESTEIM[MG[GYNM[DGLSFAERL[VHHDKDC[DW[FADV[VPERTYVLDWVF KSSGPI[SHAKD[IM[HG[GYNM[DGLSIVKKLYKSERIDGDMWYTY[IPDQALFLDWVF | 1033 587 |
| DU1 SS3 | ADGPPGSARNYDNN[GHD[FLATL[PN[NMTE[EEYW[MEEE[QRTYTR[Q[FER[RE[PA[TKRKA ADGPPKHA[AYDNN[HRODFH[AI[PNH[PEE[LYWVEE[HQI[FKTL[Q[FER[RE[AMRAKU | 1092 646 |
| DU1 SS3 | ERNAKMK[AE[EM[KE[KT[MRM[IV[SQKH[IVY[TEPE[THAGITIDM[LYNPSNTV[LGKPEWFER EKTALLK[TE[ER[DM[KE[LL[ISOKH[IVY[TEPE[TDAGSSVT[LYNPA[NTV[LGKPEWFER | 1151 705 |
| DU1 SS3 | CSENRMWY[PGGM[PPQKM[VOA[ENG[SHL[KAT[MY[PR[DAYMMDFV[SE[EGG[YDNRNCI CSENRMWTHR[GL[PPQKM[PA[ENG[THV[RA[TV[VEL[DAYMMDFV[SER[EDGG[FDNKSCM | 1210 764 |
| DU1 SS3 | DYHIPVFGS[IAKEPPMHIVHIAVEMAPIAKVGGLGDV[TSLSRAVQD[GHNV[EVILPKY DYHIPVFGVAKKEPPMHIVHIAVEMAPIAKVGGLGDV[VTSL[SRAVODL[HNVPDILLPKY | 1269 823 |
| DU1 SS3 | GCLNLSV[RN[QI[OSFSWGG[SE[IN[WRG[VEGL[CVY[FILEPONG[EV[GY[RD[DR DCLKMNNV[KDFRFH[KNYFNGCTE[IKWFGKVEGL[SVY[FILEPONG[ESKG[CVY[GCSN[DG | 1328 882 |

FIGURE 6A-2



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| | | |
|------------|--|--------------|
| DU1 SS3 | RFGFFCRSALEFLLIQGSSSTNTIHCHDWSSAPVAWT[REDACTED]YAKSSLANARWFTIHNL RFGFFCRAALEFLLIQGFSPLIHCHDWSSAPVAWL[REDACTED]YTHYQL5KSRIVFTIHNL | 1387 941 |
| DU1 SS3 | [REDACTED]FGAHHIGKAMRYODKATTVSNTYSKEVSGHGAIVPHIGFVGLNGIDPDIWDPYNDNF [REDACTED]FGADLIGRATMNTNADKATTVSPTYSQEVS[G]NPIAPHIKKEHGIVNGIDPDIWDPYNDKE | 1446 1000 |
| DU1 SS3 | [REDACTED]IPVHYTQENVVEGKRAAKRALQKFGIQQIDMPVGVTRLTQKGITHLIKHAJHRTLE [REDACTED]IPVPTSENVEGKTAKEALORKILGLQADIPVUGIITRLTQKGITHLIKHAJWRTLE | 1505 1059 |
| DU1 SS3 | [REDACTED]RNQGVVLLGSAPDSRIOADFVNLANL[REDACTED]LHGVMNHGQVRISSLYDEPLSHLIIYAGSDFILVP [REDACTED]RNQGVVLLGSAPDSRQVNMFVNLANQ[REDACTED]LHSKYNDRA[REDACTED]LTYDEPLSHLIIYAGADFILVP | 1564 1118 |
| DU1 SS3 | [REDACTED]SIFEP CGLTTQLVAMRYCIP[REDACTED]VRKTGGFLDTVFDVDNDKERARDRGLEPNGFSFDGADS [REDACTED]SIFEP CGLTTOLVAMRYGSIPWV[REDACTED]VRKTGGFLDTVFDVDNDKERAOQQGLEPNGFSFDGADA | 1623 1177 |
| DU1 SS3 | [REDACTED]NGVDYALNRRAISAWEDAR[REDACTED]SLCKRIVMEQDWSSWNRPALDY[REDACTED]ELYRSASKL [REDACTED]GGYDYALNRRAISAWEDGRWENSLCKRIVMEQDWSSWNRPALDY[REDACTED]ELYHAAKLE | 1674 1230 |

DU1 (SEQ ID NO: 12)

SS3 (SEQ ID NO: 35)

FIGURE 6A-3

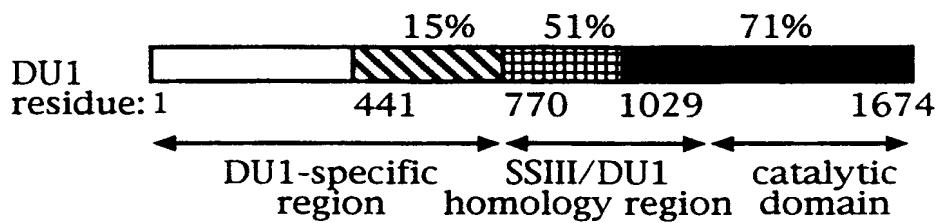


FIGURE 6B



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FIGURE 7A



SBE-repeats in DU1:

| | | | |
|-----|----------------|---------------------|---------------------|
| 478 | DQ SIVG SHKQ | 487 (SEQ ID NO: 16) | 457 (SEQ ID NO: 18) |
| 538 | DQ SIVG S[K]Q | 547 (SEQ ID NO: 17) | 577 (SEQ ID NO: 19) |
| | | | 427 (SEQ ID NO: 20) |
| | | | 437 (SEQ ID NO: 21) |
| | | | 413 (SEQ ID NO: 22) |
| | | | 607 (SEQ ID NO: 23) |
| | | | 5/6 match |
| 448 | NQ SIVG SCKQ | | |
| 568 | NQ SIVG LPKQ | | |
| 418 | DQ SIA[G] SHRQ | | |
| 428 | DQ SIA[G] APEQ | | |
| 404 | DK SIVG VPQQ | | |
| 598 | DL SIVG NEFQ | | |
| | | | 5/6 match |



SBEI family:

| | | | | |
|-----|------------|--------|------------|-----------------|
| 529 | KCIAAYAESH | DQSIVG | DKTIAFLLMD | (SEQ ID NO: 24) |
| | KCVSYAESH | DQSIVG | DKTIAFLLMD | (SEQ ID NO: 25) |
| | KCIAAYAESH | DQSIVG | DKTMAFLLMD | (SEQ ID NO: 26) |

6/6 match

SBEII family:

| | | | | |
|-----|-----------|--------|------------|-----------------|
| 572 | KCVTYCESH | DQALVG | DKTIAFWLMD | (SEQ ID NO: 27) |
| | KCVTYAESH | DQALVG | DKTIAFWLMD | (SEQ ID NO: 28) |
| | KCVYCESH | DQALVG | DKTLAFLWMD | (SEQ ID NO: 29) |

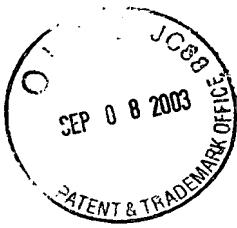
4/6 match

Glycogen branching enzymes:

| | | | | |
|-----|------------|--------|-------------|-----------------|
| 477 | KVYAESH | DQALVG | DKSLLAFWLMD | (SEQ ID NO: 30) |
| | KCIAAYAESH | DQALVG | DKTLLAFWLMD | (SEQ ID NO: 31) |

4/6 match

FIGURE 7B-2



150 → [E] T V D E A E V E E D K - - F E V D T S G I V L R N V A V R
[E] - V D P K D E H N A K D V F V V D S S G T A P D N A A V E
[E] V V D E A E V E E D M - - V D V D I L G L D L N N A T I ← 233
(SEQ ID NO: 32) (SEQ ID NO: 33) (SEQ ID NO: 34)

FIGURE 7C

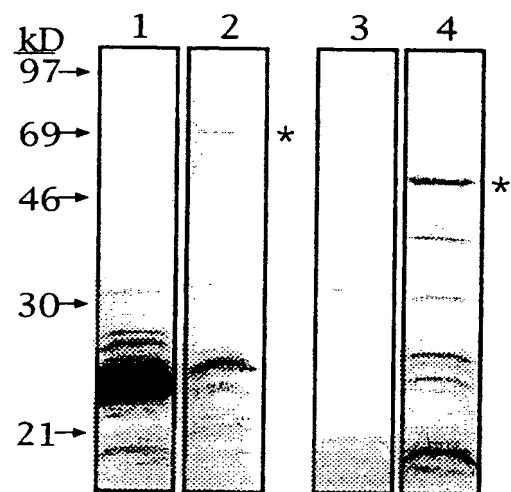
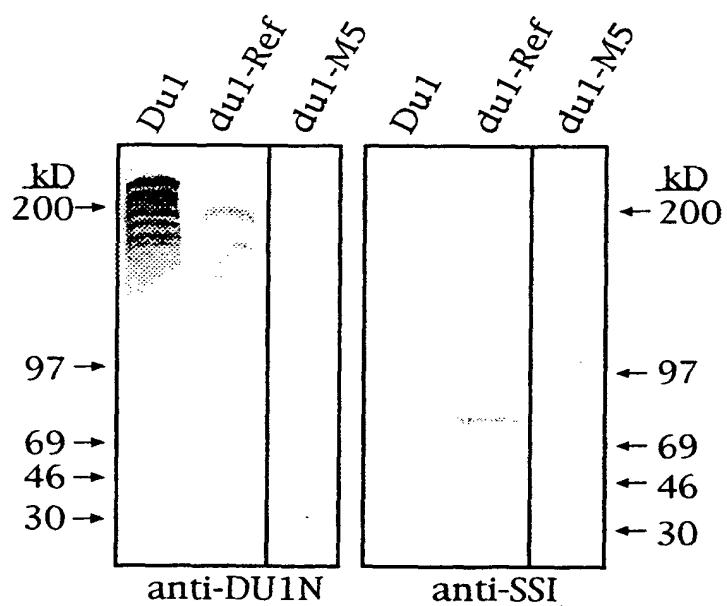


FIGURE 8

**FIGURE 9A**

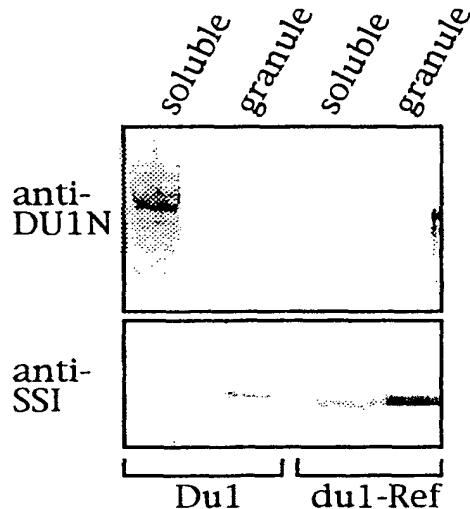


FIGURE 9B

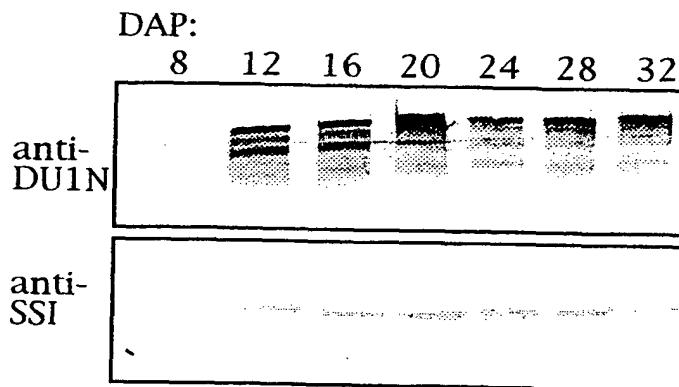
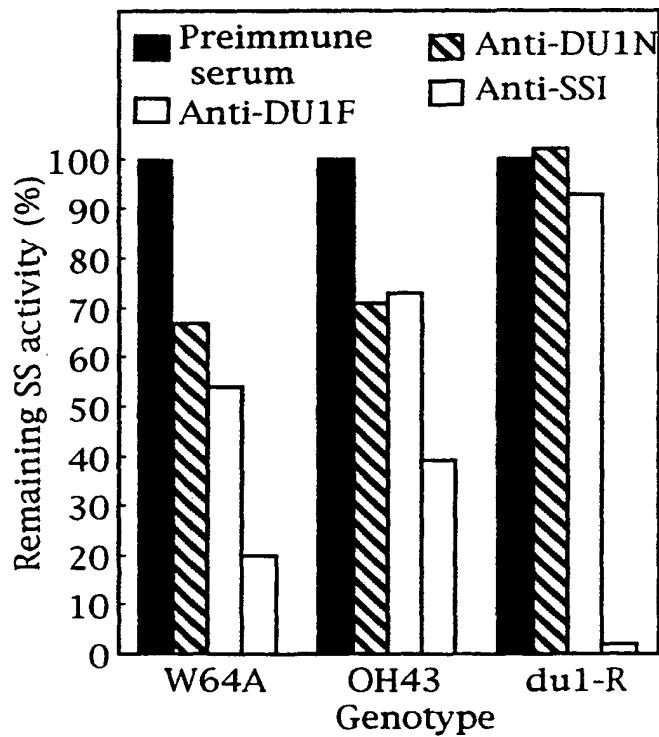
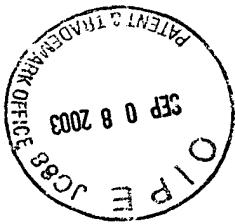


FIGURE 9C

**FIGURE 10**

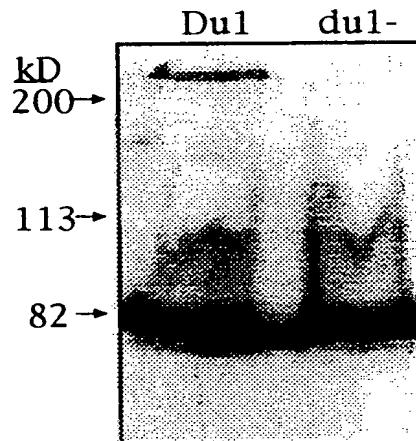


FIGURE 11A

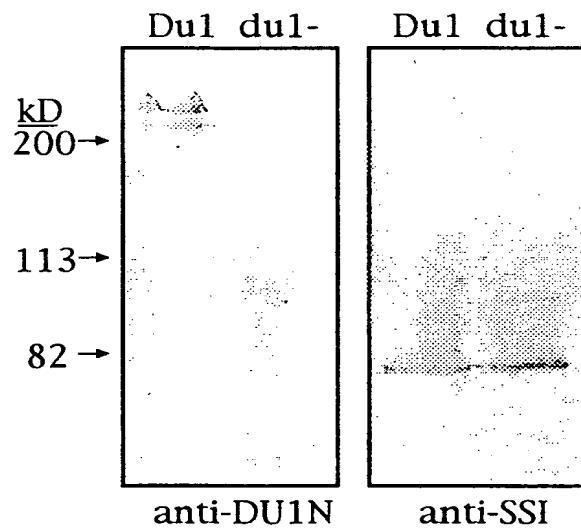


FIGURE 11B

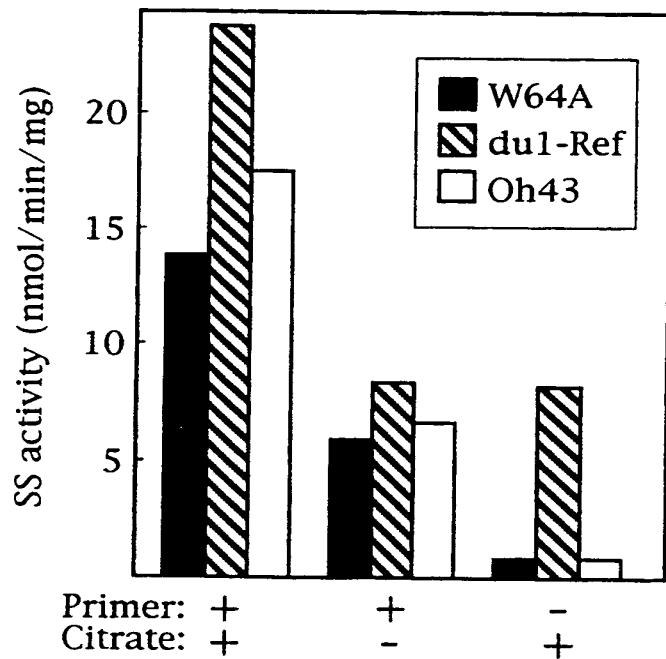
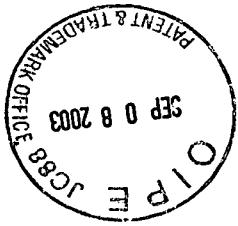


FIGURE 12